Public Information Pamphlet

Pawcatuck River and Narragansett Bay Drainage Basins
Water and Related Land Resources Study

Big River Reservoir Project

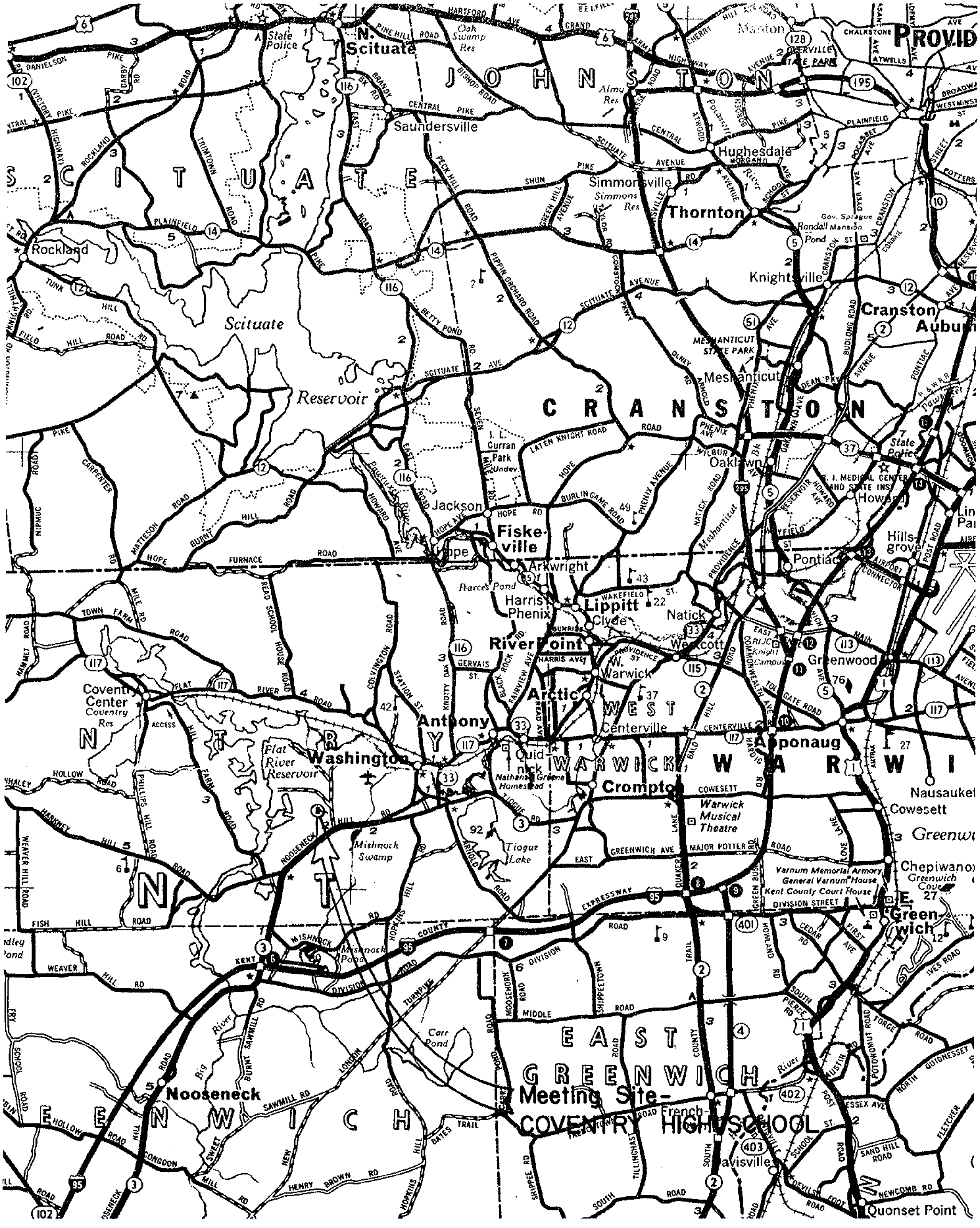
Coventry and West Greenwich, Rhode Island

Prepared For:

A Public Meeting At 7:30 P.M.
Thursday, March 26, 1981
Coventry High School Cafeteria
Coventry, Rhode Island

US Army Corps of Engineers
New England Division

MEETING LOCATION MAP



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:
NEDPL-BU

26 February 1981

ANNOUNCEMENT OF PUBLIC MEETING
BIG RIVER RESERVOIR PROJECT
COVENTRY & WEST GREENWICH, RHODE ISLAND

MEETING TO BE HELD AT 7:30 PM
ON THURSDAY, 26 MARCH 1981
AT COVENTRY HIGH SCHOOL
RESERVOIR ROAD
COVENTRY, RHODE ISLAND

I would like to take this opportunity to invite all interested parties to a public meeting on the Tentatively Selected Plan and project for flood damage reduction, water supply, and recreation for the Pawtuxet River Basin and Providence metropolitan area. The public meeting will be held by the U.S. Army Corps of Engineers at 7:30 P.M. on Thursday, 26 March 1981 at Coventry High School on Reservoir Road in Coventry, Rhode Island.

The New England Division, Corps of Engineers, is nearing completion of a study conducted to determine the feasibility of the proposed Big River Reservoir for flood damage reduction in the Pawtuxet River Basin and for meeting the future municipal and industrial water supply needs of the City of Providence and surrounding communities as shown on Plate 1. Recreation facilities are also included in the proposed multiple-purpose project. The objective of this final public meeting is to present the Tentatively Selected Plan and proposed Federal project to the public and to solicit views and comments on the Corps tentative recommendations. The plan and project are addressed in the accompanying description. Also included are a summary description of alternative plans considered but not included among the tentative recommendations and a summary of environmental considerations.

The study has been conducted in partial response to a resolution by the Committee on Public Works of the United States Senate adopted on 29 March 1968 and in compliance with a request from the Governor of Rhode Island dated 8 January 1978. Copies of the draft Feasibility Report were distributed on 30 January 1981 for review by Federal, State, regional and local government entities, interest groups and interested individuals and have also been placed in libraries throughout the study area to afford examination by the public at large.

The public meeting is also being held to present the draft Environmental Impact Statement and evaluation studies conducted in compliance with Section 404 (b) of the Clean Water Act of 1977 (Public Law 95-217). These documents were also distributed for public review with the draft report.

Following the public meeting, the Corps of Engineers will review the data presented by the public and the comments received in response to the draft Feasibility Report and draft Environmental Impact Statement. A final report will then be prepared by the New England Division and forwarded through the Office, Chief of Engineers in Washington, D.C. to the Board of Engineers for Rivers and Harbors for approval. The report will then be forwarded to the Congress for authorization contingent upon approval by the Board.

All those interested are urged to attend or be represented at the public meeting which will begin with a presentation of the findings of the study. All parties will be afforded full opportunity to express their views and to present specific data on matters pertinent to the study including technical, economic, social and environmental material. Statements should be supported by factual information insofar as possible.

During the meeting, oral statements will be received, however, for accuracy of record, it is suggested that all important facts and statements be submitted in writing. Written statements may be submitted at the meeting or mailed beforehand to the New England Division office as shown on the letterhead. Mailed statements should indicate that they are in response to this announcement. All statements, both oral and written will become part of the official record of this study and will be made available for public examination. Supplementary comments submitted within 15 days following the meeting will also be included in the record of the meeting. All statements will be given full consideration in preparing the final recommendations of the study.

This notice should not be construed as an indication that the Federal government will undertake the proposed multiple-purpose Big River Reservoir project in Rhode Island. Although the study may result in recommendations for Federal implementation of the project, their accomplishment will depend upon subsequent authorization and funding by the United States Congress.

Any questions or requests for additional information should be directed to Mr. John Craig at (617) 894-2400 extension 503, or to me at the following address:

Division Engineer
U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254

Kindly bring this announcement to the attention of anyone who may not have received a copy or anyone you know who would be interested in this matter.

C. E. EDGAR, III
Colonel, Corps of Engineers
Division Engineer

Incl
as stated

DESCRIPTION OF PLAN AND PROPOSED FEDERAL PROJECT

The Tentatively Selected Plan for the study area consists of a comprehensive water resources management plan for flood damage reduction, municipal and industrial water supply and recreation. Flood damage reduction is limited to the Pawtuxet River Basin and centers on the major damage areas along the mainstem in West Warwick, Warwick and Cranston. Damages would be reduced by the provision of floodwater storage in the proposed Big River Reservoir located in the South Branch watershed of the Basin and by continued participation in the National Flood Insurance Program. Water supply needs of study area communities would be satisfied by implementation of a water conservation program focusing on reduction of future water demands and by the phased-development of groundwater and surface water resources having a combined safe yield of 42 million gallons per day (MGD). Recreational needs within the State of Rhode Island would be served in part by the provision of various types of recreation facilities within the State-owned property in concert with the proposed reservoir development. This plan is designated as Plan C in the draft report and is shown on Plate 2.

Phased development of groundwater supplies would serve the needs of some of the more rural communities in the study area in addition to meeting the present and short-term demands of Bristol County communities. In addition, construction of the proposed multiple-purpose Big River Reservoir would provide water supply storage to satisfy the needs of systems serving the City of Providence and other communities in the metropolitan area. Water treatment facilities having a design capacity of 60 MGD, an aqueduct consisting of an 84-inch inside diameter tunnel approximately 6.7 miles in length, and water transmission facilities consisting of about 12.4 miles of 18-inch pipeline to serve future needs of the Bristol County communities of Barrington, Bristol and Warren, would also be constructed. The proposed reservoir and water treatment facilities would be located within the approximately 8300-acre property acquired by the State of Rhode Island during the mid-1960's.

Not all elements of the Tentatively Selected Plan would be eligible for implementation by the Federal government. The water conservation program, groundwater resources development, and all water supply transmission and aqueduct facilities required by the plan, would be implemented by State and local authorities. Likewise, water treatment facilities constructed in conjunction with the proposed reservoir would be the responsibility of State and/or local authorities. Only the multiple-purpose Big River Reservoir, including a 90-inch diameter, 3200 feet long raw water aqueduct, and associated recreation facilities would be eligible for implementation by the Federal government under current Corps of Engineers authority. This project, designated as the Proposed Project for Federal Implementation in the draft report, would be developed in greater detail during future Advanced Engineering and Design Studies if a project is authorized.

The proposed Federal project shown on Plates 3 and 4 would consist of the Big River Reservoir located in Coventry and West Greenwich. The dam would be constructed just upstream of the existing Flat River Reservoir (Johnson's Pond) in Coventry, where Harkney Hill Road crosses the Big River, and would inundate an area of about 3400 acres (5.3 square miles) at spillway crest of 303.0 feet National Geodetic Vertical Datum (NGVD) formerly referred to as Mean Sea Level Datum. The approximately 2240 feet long dam would be constructed to an elevation of 312.0 feet NGVD and would have a maximum height of 70 feet above streambed. The dam would be a rolled earthfill structure with rock slope protection on both faces and constructed with a 20-feet wide access road. Total storage capacity provided by the reservoir would be 95,400 acre-feet consisting of 12,300 acre-feet of conservation storage, 73,600 acre-feet of water supply storage, and 9,500 acre-feet of flood control storage equivalent to six inches of runoff from the 29.7 square mile watershed above the dam. Outlet works located in the left abutment would consist of an intake channel, a gatehouse of twin-well design to provide for flood control regulation and releases for water supply, conduits, outlet structure and outlet channel to the upstream end of Flat River Reservoir. The spillway would be located in a rock cut in the left abutment and would consist of a chute-type spillway with a 400-feet uncontrolled concrete weir. Discharge would be directly into the upstream end of Flat River Reservoir. A section of the impoundment, between Division Street and Interstate Route 95 extending easterly from Nooseneck Hill Road (Route 3) for approximately 8000 feet, would require construction of an impervious blanket to control seepage out of the reservoir. Operation of the proposed Big River Reservoir in combination with the existing water supply facilities at Scituate Reservoir would provide a safe yield for water supply purposes of about 113 MGD, sufficient to meet demands of the study area projected by the year 2030.

The flood control element of the proposed reservoir would reduce flood stages, such as experienced in the July 1938 and March 1968 floods, by about 1.5 to 2.0 feet in the South Branch and upper mainstem of the Pawtuxet River. On the lower mainstem, in the vicinity of the Warwick Industrial Park, reductions would be in the order of 0.5 foot.

Future recreational needs would be met by provision of opportunities for boating, camping, fishing, horse-back riding, hunting, picnicking and swimming at six major use areas within the State-owned reservoir property.

IMPACTS OF THE TENTATIVELY SELECTED PLAN

Beneficial Impacts

The most important beneficial impact from implementation of the Tentatively Selected Plan would be provision of adequate, dependable water supplies to satisfy the needs of study area communities. Augmentation of existing supply systems to meet water requirements projected by the year 2030 would enhance regional development, social well-being and overall environmental quality in the study region. Reduction of flood damages and increased recreational opportunities constitute the other most significant beneficial effects of the plan.

Provision of flood control storage in the proposed Big River Reservoir would eliminate an estimated $782,000 in average annual flood losses. Flood losses resulting from a flood such as experienced in March 1968 would be reduced from $850,000 to approximately $350,000. Likewise, estimates of flood losses resulting from a flood such as experienced in January 1979 would be reduced from $2.9 million to $1.6 million. The reduction of human suffering associated with flooding would also be a beneficial impact.

Recreational facilities at the Big River site would provide increased opportunities thus alleviating in part some of the recreation demands of the State.

Adverse Impacts

The most significant adverse impacts of the Tentatively Selected Plan would be the inundation of approximately 3,200 acres of stream/forest environment at the Big River site, with accompanying effects on fish and wildlife habitat, and cultural resources. Approximately 520 acres of wetlands would be lost by implementation of the proposed Big River Reservoir.

The Corps of Engineers is required by the National Environmental Policy Act of 1969, the National Historic Preservation Act of 1969, the Fish and Wildlife Coordination Act, and Executive Order 11990, Protection of Wetlands (1977) to locate, identify and evaluate potential impacts upon cultural resources that may be affected by proposed projects.

In compliance with these requirements, the New England Division conducted a preliminary cultural resources reconnaissance. A detailed study of the cultural resources of the study area would be accomplished in future Advanced Engineering and Design Studies if they are authorized.

Relocation of approximately 440 residents within the State-owned reservoir property and some local roads would be required at the Big River Reservoir site. Construction activities would also cause temporary adverse effects on air and water quality and noise as well as some local disruption of traffic and utilities.

ENVIRONMENTAL AND MITIGATION REQUIREMENTS

Construction related impacts are temporary in nature and are considered to be ameliorated by using efficient and environmentally acceptable construction practices.

Structural and non-structural measures are planned to mitigate, to the extent feasible and practical, impacts due to implementation of the Tentatively Selected Plan. A comprehensive forest management plan would include promotion of natural regeneration through manipulation of existing cover types. The carrying capacity of existing habitats would be increased through an intensive management program. Reclamation of existing mining operation areas in the project area would enhance the management potential of mitigation land. This would be accomplished by restoring the landscape to its natural contours and replanting with drought tolerant native vegetation.

Project activities are not expected to adversely affect any threatened or endangered species likely to be found in the project area.

ECONOMICS

Economics of the Tentatively Selected Plan are presented in a subsequent section of this information pamphlet. The economic analysis of the proposed Federal project described earlier is addressed in the following paragraphs.

The economic justification of the proposed Big River Reservoir project is determined by comparing the equivalent average annual costs (interest, amortization, operation and maintenance, and replacement of major equipment) with the estimated equivalent average annual benefits which would be realized over the 100-year economic life of the project. Appropriate values assigned to costs and benefits at the time of accrual are made comparable by conversion to an equivalent time basis using an appropriate rate of interest. Costs and benefits are presented at January 1979 price levels using an interest rate of 7-3/8 percent which is the interest rate applicable to Federally-sponsored water resource projects at this time. These costs and benefits would increase when updated to current price levels. Project economics are summarized in Table 1.

Costs

The first cost of the proposed Federal project is estimated to be $57,460,000 which includes the cost of construction, lands and relocations, recreational facilities and mitigation requirements for cultural and natural resources. Interest during construction was based on the estimated four-year construction period.

Annual operation and maintenance costs of $370,000 were estimated on the basis of experience with other similar projects. Investment costs were annualized based on a 100-year project life with replacement of major equipment based on a 30-year life.

TABLE 1

ECONOMICS OF PROPOSED FEDERAL PROJECT
(January 1979 Price Level in $1,000's)

INVESTMENT COST

	FLOOD CONTROL	WATER SUPPLY	RECREATION	TOTAL
Project First Cost	$5,424	$51,601	$435	$57,460
Interest During Construction	800	7,611	64	8,475
Total Investment	$6,224	$59,212	$499	$65,935

TABLE 1 (continued)

ANNUAL COSTS

	FLOOD CONTROL	WATER SUPPLY	RECREATION	TOTAL
Interest & Amortization	$459	$4,371	$37	$4,867
Operations & Maintenance	75	277	18	370
Replacement	0	1	0	1
Total Annual Cost	$534	$4,649	$55	$5,238
Annual Benefits	$782	$5,104	$66	$5,952
Benefit-Cost Ratio	1.46	1.20	1.10	1.14
		1,10	1,2	

Benefits

Total annual benefits for the proposed Big River Reservoir project would be $5,952,000 as shown in Table 1. Implementation of the proposed project would prevent average annual flood damages and would also provide water supply and recreation benefits. Providing flood control storage would result in average annual benefits of $782,000 by reducing flood damages in the communities of West Warwick, Cranston and Warwick. Annual water supply benefits of $5,104,000 were derived by considering a single-purpose water supply project at the Big River site. Average annual recreational benefits of $66,000 were estimated by comparing annual attendance for recreational activities at the Big River site with and without the project.

Justification

The determination of annual costs, annual benefits and the ratio of benefits to costs, summarized in Table 1 indicate that the proposed multiple-purpose Big River Reservoir project is economically justified. Each project purpose, flood control, water supply and recreation, is also separately justified. With total average annual benefits of $5,952,000 and total average annual costs of $5,238,000 the benefit to cost ratio for the project is 1.14 to 1.

LOCAL COOPERATION

Legislative and administrative policies have established the basis for Federal and non-Federal sharing of responsibilities in the implementation of Federally-sponsored water resources projects. Implementation of the proposed Big River Reservoir project would require that non-Federal interests accept the responsibility to provide various items of local cooperation. Two procedures for determining non-Federal cost sharing responsibilities are presented in Table 2.

TABLE 2

COST SHARING ALTERNATIVES
(January 1979 Price Level, $1,000's)

PROJECT FIRST COSTS

Existing Legislation

	FEDERAL	NON-FEDERAL	LAND VALUE[1]	TOTAL
Flood Control	$5,424	-	-	$ 5,424
Water Supply	-	$20,291	$30,680	51,601
Recreation	315	-	120	435
Project First Cost	$5,739	$20,291	$30,800	$57,460

President's 1978 Water Policy

	FEDERAL	NON-FEDERAL		LAND VALUE[1]	TOTAL
		State	Local		
Flood Control	$4,068	$ 271	-	$ 1,085	$ 5,424
Water Supply	-	5,160	$16,846	29,595	51,601
Recreation	293	22	-	120	435
Project First Cost	$4,361	$5,453	$16,846	$30,800	$57,460

ANNUAL OPERATION & MAINTENANCE

	FEDERAL	NON-FEDERAL	TOTAL
Flood Control	$25	$ 50[2]	$ 75
Water Supply	-	277	277
Recreation	3	15	18
Totals	$28	$342	$370

[1]Allocated value of State-owned land.

[2]Cost for on-site flood control activities - reimbursed by Federal government.

The first procedure follows the existing laws and policies established for local cooperation in major reservoir projects for flood control, water supply storage included in such projects, and associated recreational facilities. The second is based upon the President's June 1978 water policy message as applied to similar projects. The proposed cost-sharing established by the President's message will be incorporated in the final report recommendations.

Non-Federal interests must furnish their views on these cost-sharing proposals and indorse the scope and type of project in order for the Corps of Engineers to recommend the project for authorization. The items of local cooperation regarding cost-sharing for the proposed Federal project are as follows:

Existing Legislation

Under this procedure all costs allocated to flood control estimated to be $5,424,000, would be the responsibility of the Federal government. On-site operation and maintenance costs associated with this purpose, normally a Federal responsibility, would be reimbursed to the non-Federal sponsors since it is assumed that these activities would be more readily carried out by the non-Federal interest. The cost to be reimbursed is estimated at $50,000 annually. The non-Federal share of recreation costs would be based upon payment of 50 percent of the estimated $240,000 separable cost allocated to this purpose. Operation and maintenance costs required by the non-Federal interest for this component of the project are estimated at $15,000 annually. Reimbursement of the entire cost allocated to water supply, estimated to be $51,601,000, would be made to the Federal government in accordance with the requirements of the Water Supply Act of 1958, as amended. Operation and maintenance costs for this project purpose are estimated at $277,000 annually.

Since the lands required for implementation of the proposed Big River Reservoir project are owned by the State of Rhode Island, their value has been allocated to each project purpose to reduce the non-Federal share of project first costs as shown in Table 2.

President's 1978 Water Policy

Under the President's June 1978 water policy it is required that the State of Rhode Island contribute an estimated $5,453,000 in cash (5 percent of $5,424,000 estimated cost allocated to flood control, 5 percent of $435,000 estimated cost allocated to recreation, and 10 percent of $51,601,000 estimated cost allocated to water supply) and that non-Federal interests make in addition to the State contribution, a cash or in-kind contribution of an estimated $47,646,000 (20 percent of $5,424,000 estimated cost allocated to flood control, 50 percent of $240,000 estimated separable cost allocated to recreation, and 90 percent of $51,601,000 estimated cost allocated to water supply). The combined non-Federal share is currently estimated to be $53,099,000. The value of State-owned lands necessary for construction of the proposed Big River Reservoir project has been allocated to each project purpose to reduce the non-Federal share of project first costs as shown in Table 2. Operation and maintenance costs under this cost-sharing procedure are the same as under Existing Legislation.

Other items of local cooperation would be required for implementation of the proposed Federal project and will be included in the final report recommendations.

SUMMARY OF ALTERNATIVE PLANS

In addition to the Tentatively Selected Plan, Plan C, two other plans were considered. Table 3 summarizes the comparative economics of all three plans. Following is a brief description of the plans not tentatively selected.

TABLE 3

SUMMARY ECONOMICS OF ALTERNATIVE PLANS
(Present Worth Values - June 1980 Price Levels in $1,000's)

	PLAN A	PLAN B	PLAN C
Benefits			
Water Supply	$6,658,000	$6,658,000	$6,658,000
Flood Damage Reduction	289,000	289,000	289,000
Recreation	22,000	22,000	22,000
TOTAL	$6,969,000	$6,969,000	$6,969,000
Costs			
First Costs	$62,370,000	$70,617,000	$66,830,000
Annual Costs	5,608,000	6,217,000	6,008,000
Net Benefits	$ 1,361,000	$ 752,000	$ 961,000
Benefit-Cost Ratio	1.24	1.12	1.16

Plan A includes groundwater development to serve Foster, Glocester and Bristol County. The multiple-purpose Big River Reservoir would provide water supplies for the remainder of the study area with water treatment facilities of 55 MGD capacity. In addition, a comprehensive water conservation program would be undertaken throughout the study area. Flood storage provided at the Big River Reservoir would protect downstream areas in the Pawtuxet River Basin, and recreation facilities developed at the reservoir would help meet the needs of the entire study area.

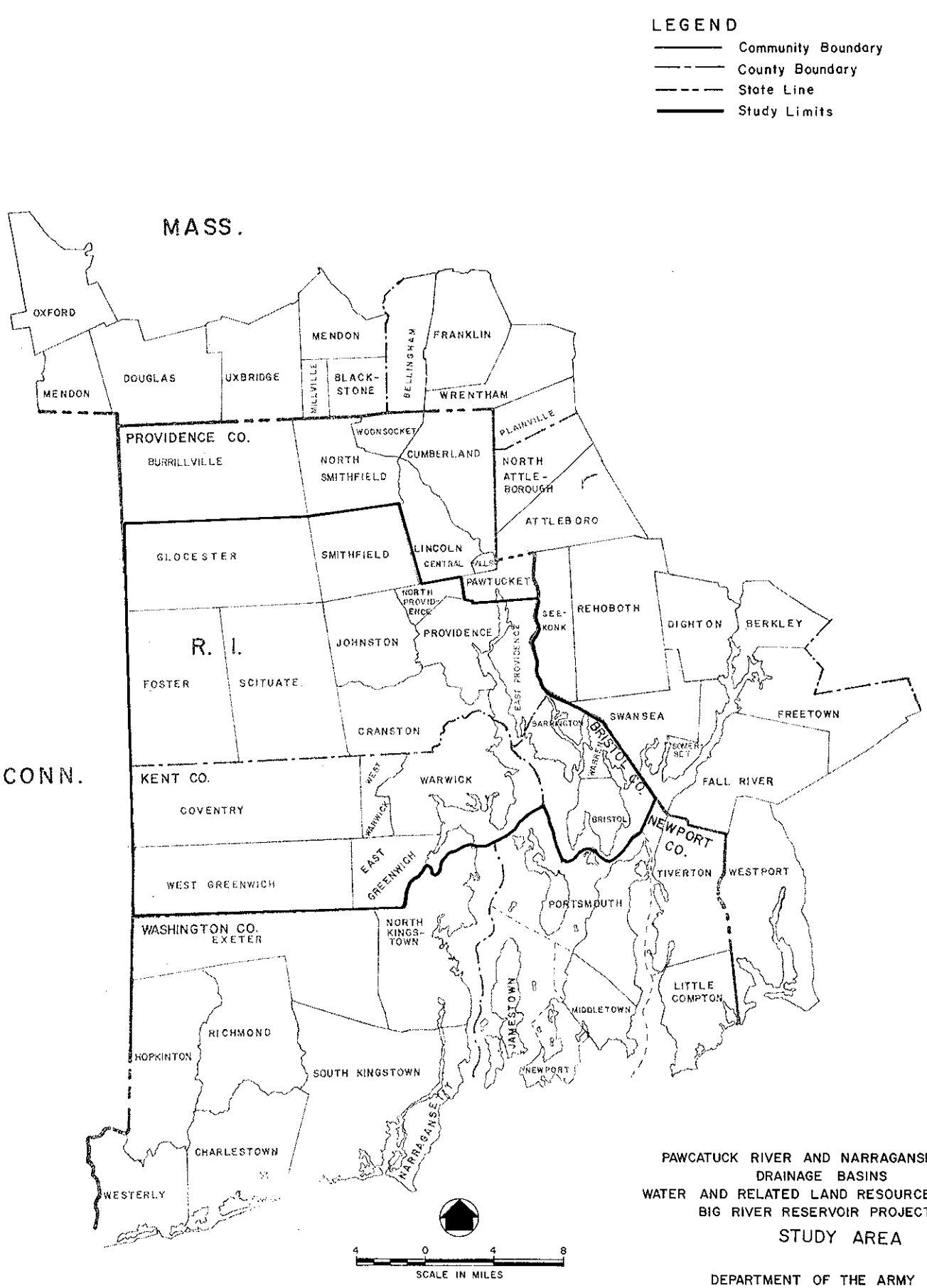
Plan B includes all elements of Plan A, and also contains additional development of the Big River site to enhance environmental quality. Construction of sub-impoundments in specific locations would create wetlands and waterfowl habitat. Additional road relocations undertaken in Plan B would permit improved access to recreation areas and would minimize social impacts due to traffic disruption. Only roads directly impacted by the reservoir would be abandoned under this plan. Additional stripping and grubbing undertaken in specific areas of the reservoir site would promote improved water quality and aquatic biota habitat.

Plan C is the Tentatively Selected Plan, and is described in detail in earlier paragraphs. Plan C is similar to Plan A with the exception that the future water supply needs of Bristol County communities would be served from the Scituate-Big River supply system. Water treatment facilities would have a capacity of 60 MGD. Plan C is a combination of Plans A and B.

All three plans include continued participation in the National Flood Insurance Program.

FUTURE STUDY EFFORTS

The entire study documentation is contained in the draft Feasibility Report that was distributed for public review and coordination on 30 January 1981. The final report will be reviewed by higher authority within the Corps and will then be forwarded to the Secretary of the Army for submission to the Congress. Congress will then decide if construction of the proposed Federal project should be authorized, and if continued efforts are warranted and funded, detailed engineering and planning studies would be undertaken. Following appropriation of funding by the Congress for construction, and consummation of a contract with the State and/or local sponsor for the required local cooperation, the project would be advertised for bids and construction initiated. Assuming this process were followed without any significant problems or delays construction of the project would be completed for use by 1995.

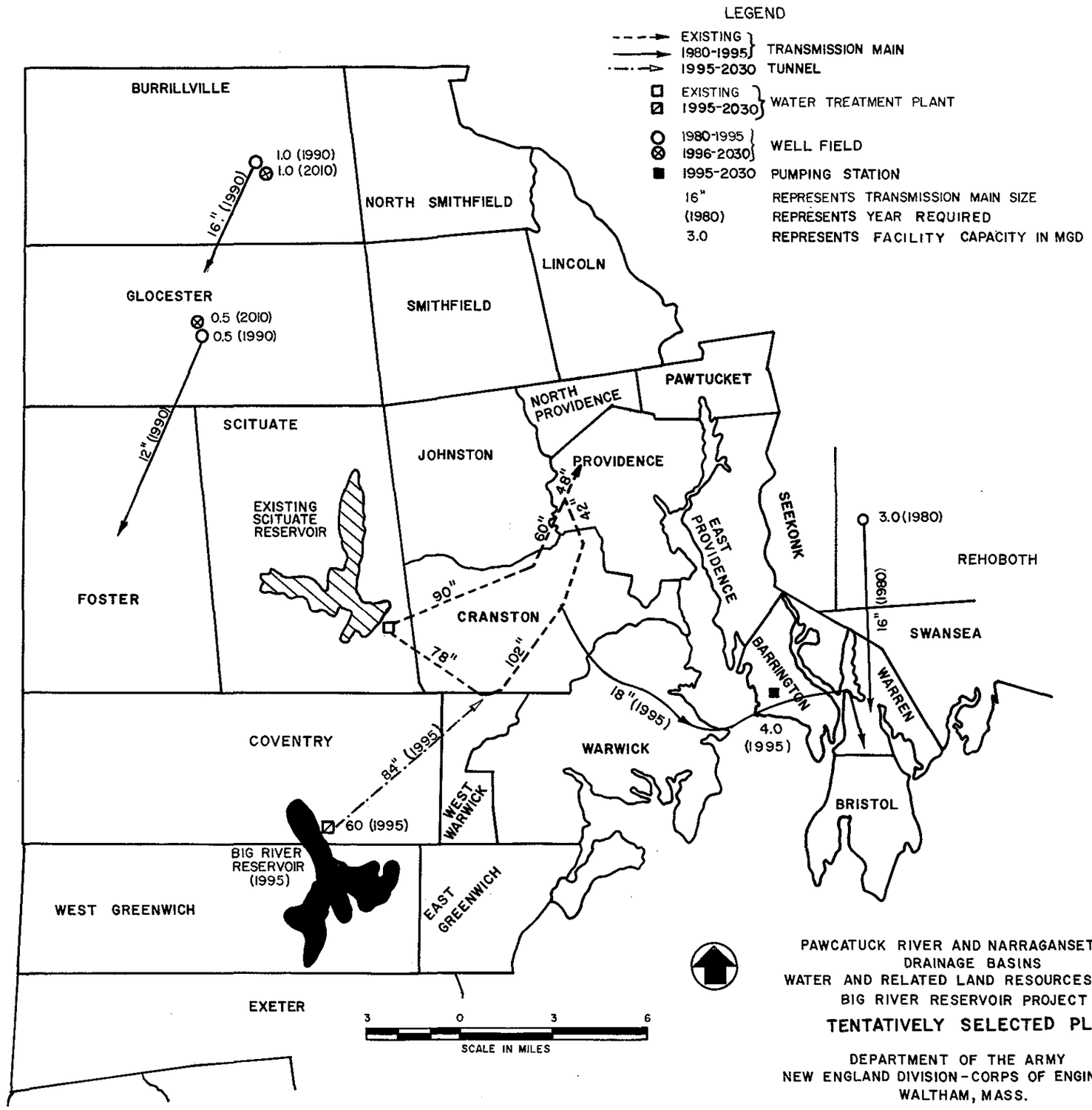


PAWCATUCK RIVER AND NARRAGANSETT BAY
DRAINAGE BASINS
WATER AND RELATED LAND RESOURCES STUDY
BIG RIVER RESERVOIR PROJECT

STUDY AREA

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION-CORPS OF ENGINEERS
WALTHAM, MASS.

PLATE I

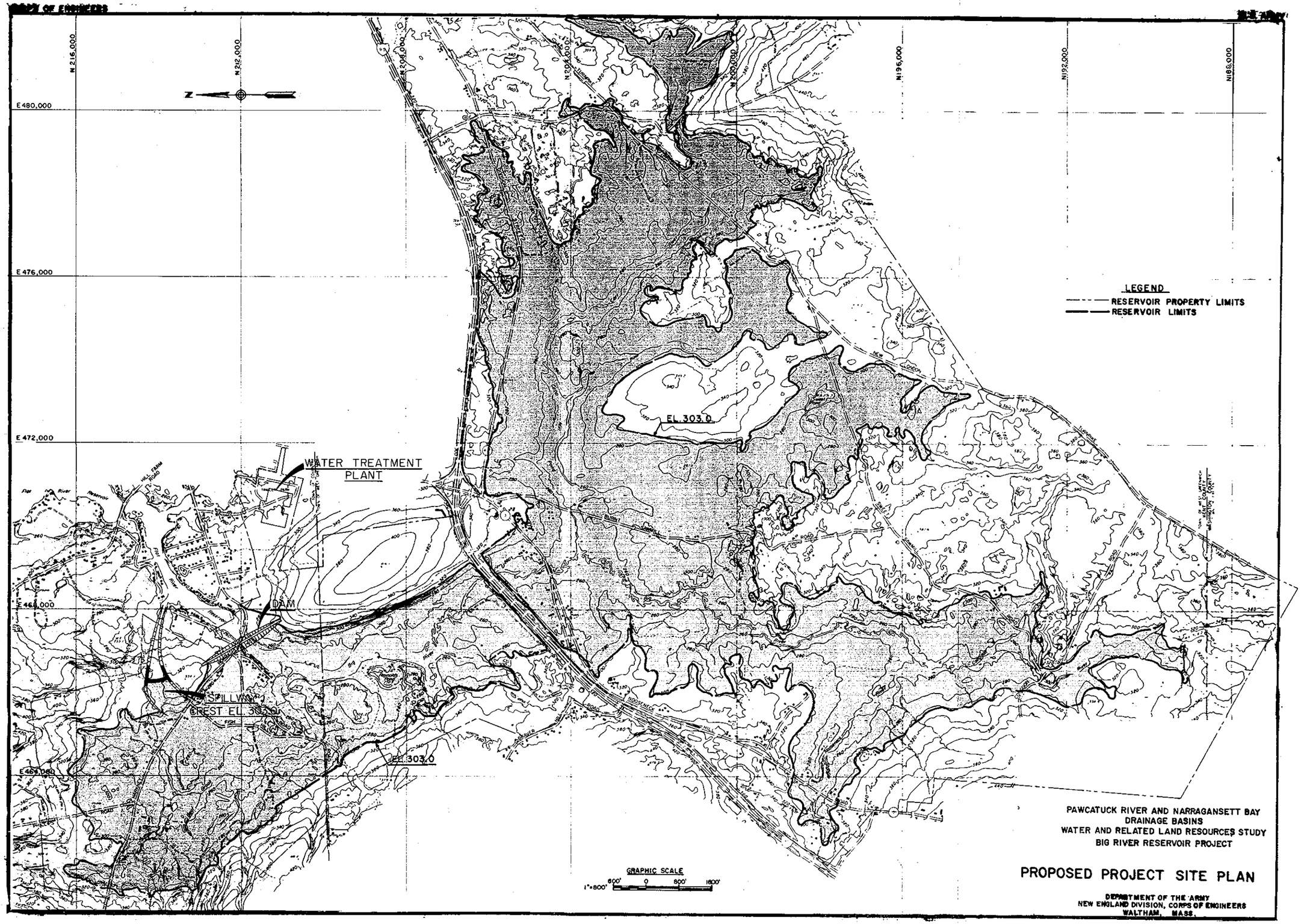


PAWCATUCK RIVER AND NARRAGANSETT BAY
DRAINAGE BASINS
WATER AND RELATED LAND RESOURCES STUDY
BIG RIVER RESERVOIR PROJECT

TENTATIVELY SELECTED PLAN

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION - CORPS OF ENGINEERS
WALTHAM, MASS.

PLATE 2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LEGEND
RESERVOIR PROPERTY LIMITS
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WATER TREATMENT PLANT
DAM
SPILLWAY CREST EL. 303.0
EL. 303.0
GRAPHIC SCALE
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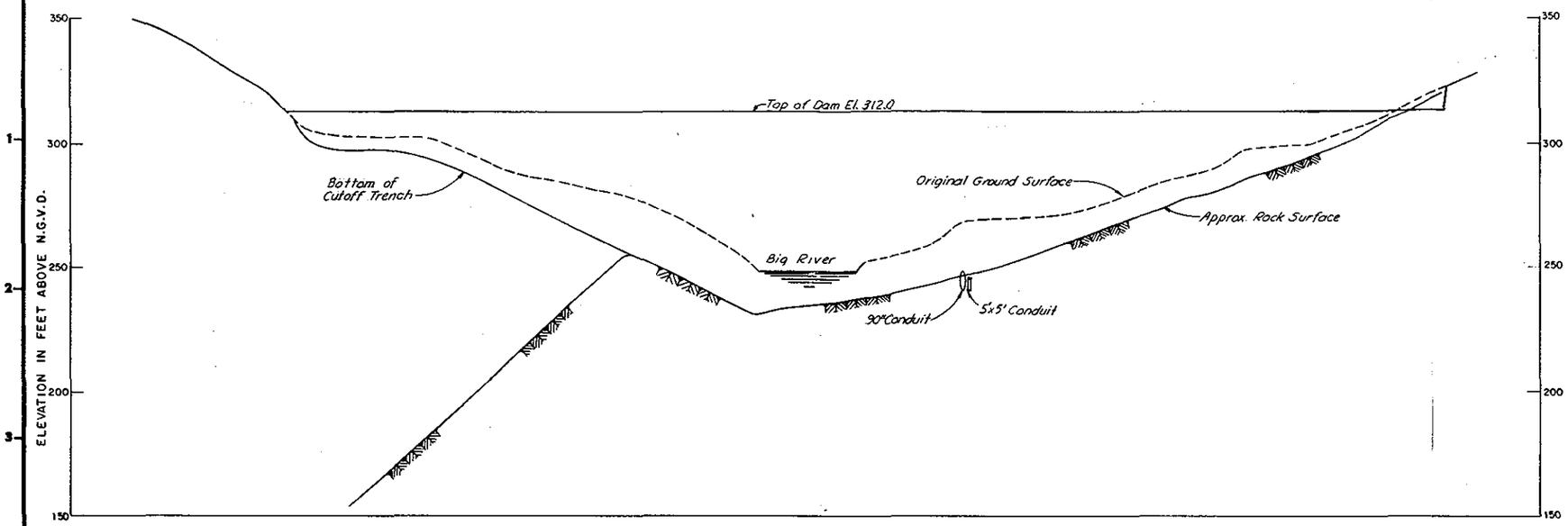
800' 0 800' 1600'
PAWCATUCK RIVER AND NARRAGANSETT BAY
DRAINAGE BASINS
WATER AND RELATED LAND RESOURCES STUDY
BIG RIVER RESERVOIR PROJECT
PROPOSED PROJECT SITE PLAN
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

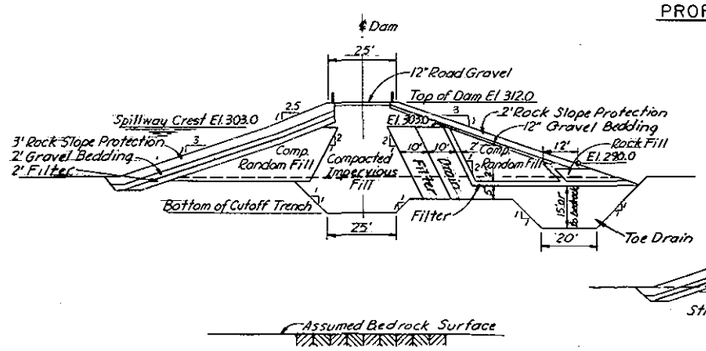
PLATE 3

CORPS OF ENGINEERS A B C D E F G H U. S. ARMY

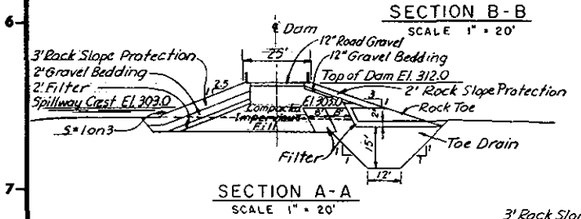


PROFILE ALONG ℄ DAM

SCALE: HOR. 1" = 100'
VERT. 1" = 20'



SECTION B-B
SCALE 1" = 20'



SECTION A-A
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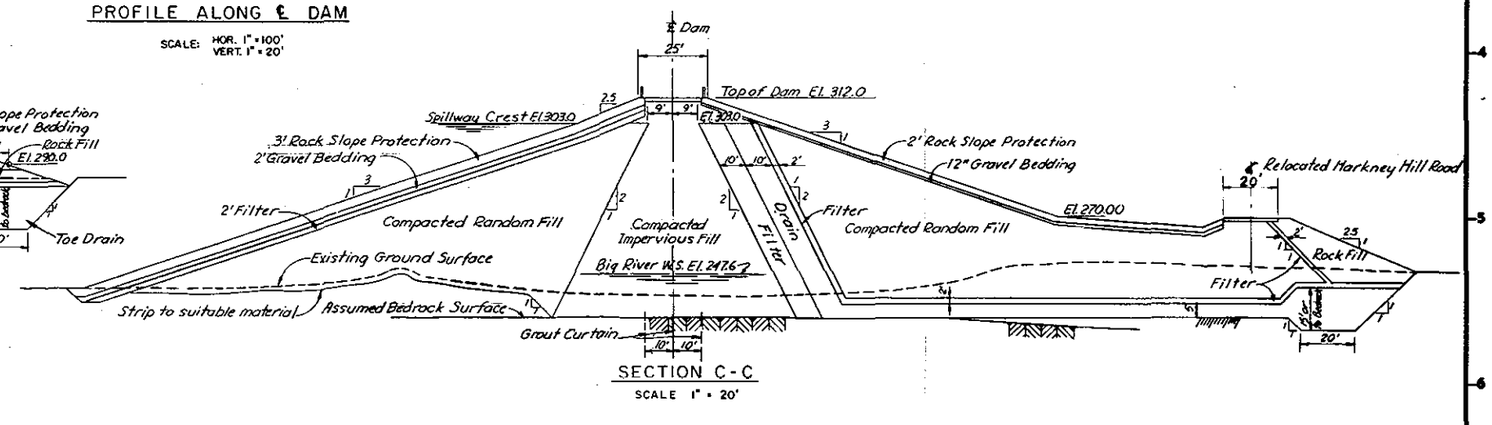
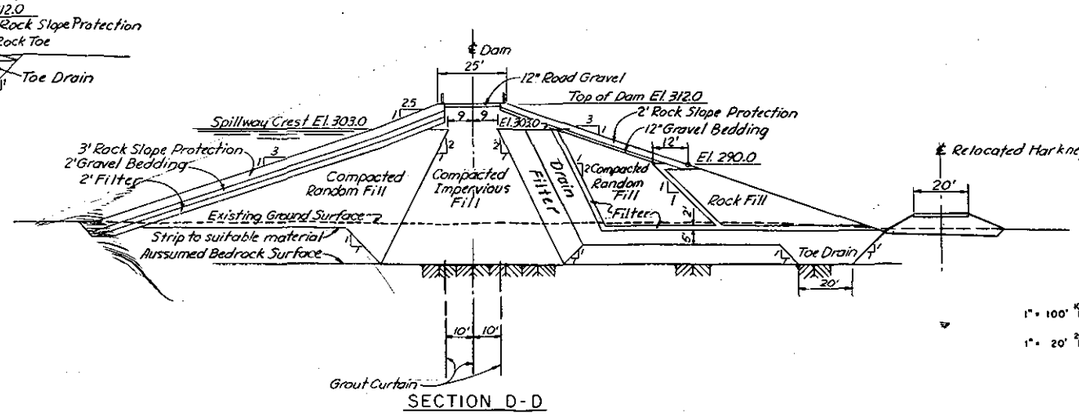


SECTION C-C
SCALE 1" = 20'



SECTION D-D
SCALE 1" = 20'

NOTE:
Elevations refer to National Geodetic Vertical Datum of 1929.

GRAPHIC SCALES

1" = 100' 100' 0 100' 200'

1" = 20' 20' 0 20' 40'

PAWCATUCK RIVER AND NARRAGANSETT BAY
DRAINAGE BASINS
WATER AND RELATED LAND RESOURCES STUDY
BIG RIVER RESERVOIR PROJECT

PROPOSED PROJECT
Profile and Sections

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION-CORPS OF ENGINEERS
WALTHAM, MASS.

PLATE 4